

REPORT

OF THE

COMMITTEES

ON

Police and Fire Alarm Telegraphs;

TOGETHER WITH

PROPOSITIONS

FOR THE

CONSTRUCTION OF THE SAME.

PRINTED FOR SELECT COUNCIL,

February 20, 1855.

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1855.

REPORT

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At a meeting of Select and Common Councils, held December 28, 1854, the following resolution was adopted:

Resolved, That the Mayor be authorized to receive plans and proposals under the supervision of the Committees on Police, and Trusts, and Fire Department, for the erection or construction of a Police and Fire Telegraph, and submit the same to Councils.

Extract from the minutes.

JOHN M. RILEY,
Clerk of Common Council.

At a meeting of the Joint Committee, held on January 12th, 1855, the following was adopted, and ordered to be sent to the Mayor:

Resolved, That the Mayor be authorized to advertise and receive proposals to construct a Fire Alarm and Police Telegraph, in accordance with the plans for Signal Boxes and Station Houses presented by the Special Committee on the subject, said proposals to be received the 1st of February next.

JOHN M. RILEY,
Clerk.

Common Council inform Select Council they have received a Report from the Joint Committees of Police, and Trusts, and Fire Department, with a Resolution annexed, which they have passed, and ask concurrence.

February 20th, 1855.



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REPORT.

To the Select and Common Councils :

The Committees of Police, and Trusts, and Fire Department, to whom was referred the supervision of the Proposals for Police and Fire Alarm Telegraph, as authorized by Councils, respectfully submit the said Proposals, and Report :

That all the Proposals received by the Mayor were opened at a joint meeting of the two Committees, held on 26th January last, and after the consideration of the numerous proposals received, it was

Resolved, That the proposition of Messrs. Purdy, Phillips & Robinson, for a Police and Fire Alarm Telegraph, at a cost not to exceed the sum of thirty-six thousand three hundred dollars, be recommended to Councils, as the best for the interest of the city.

The Committee therefore offer the following :

Resolved, That the Mayor be authorized to contract with Purdy, Phillips & Robinson, to construct a Police and Fire Alarm Telegraph, in accordance with their proposition, provided the cost does not exceed the sum of thirty-six thousand three hundred dollars.

J. W. MARTIEN, *Chairman*,
THOS. BALCH,
FRANCIS H. DUFFEE,
WM. S. SMITH,
M. SANDGRAN,
O. P. CORNMAN,
W. H. STOKES,
C. J. HOFFMAN,

J. M. BULLOCK,
HENRY C. PRATT,
C. P. ANDRESS,
JAMES GRAY,
R. P. GILLINGHAM,
H. BUMM,
WM. MORAN,
GEO. GRISCOM.

February 20, 1855.

To his Honor the Mayor,

And the Members of the Committees

on Police and Trusts of the City of Philadelphia:

The undersigned respectfully propose to erect or construct a Fire Alarm Telegraph, similar to the one now in use in Boston, with certain improvements. One hundred and fifty Signal Boxes, distributed throughout the city, HYDRAULIC MAGNETIC STRIKING APPARATUS FOR SEVEN BELLS, length of wire about *eighty miles*; Instruments, Bells, &c., for central office; and a Police Telegraph, similar to the one now used in New York, including twenty-four Signal Instruments, one at each Police Station, communicating with the central office, for the sum of fifty-six thousand dollars (\$56,000); also to give good and sufficient security for the faithful performance of the contract.

It is understood that in making this proposition, the exclusive right to use the Morse and Boston Fire Alarm Patents, for the purposes above designated, will be assigned absolutely to the city of Philadelphia.

A description of both Fire and Police systems, together with an explanatory map, is hereunto annexed, to which your attention is respectfully requested.

Very respectfully,

Your obedient servants,

JOHN H. PURDY,

W. J. PHILIPS.

Philadelphia, Jan. 8th, 1855.

DESCRIPTION OF FIRE ALARM.

The Fire Alarm Telegraph consists essentially of two parts :

First—The Signal Apparatus and Wires, by which the intelligence of a fire is communicated from every part, or any part of the city, to a Central Station.

Second—The Alarm Apparatus and Wires by which the Alarm Bells in different parts of the city are struck, is from the Central Station, by the touch of a single key, which necessarily avoids the expense of having watchmen, or bell-ringers, in the different belfries or bell-towers.

By way of illustration, we give a more detailed description of the American Fire Alarm Telegraph, and of the safeguards by which its permanence, and the regularity of its operations, are insured.

The wires are carried from the Main Station, which contains the Battery; from thence, like those of the ordinary telegraph wire, they are fastened on tall posts or houses, by means of iron brackets, and insulated by stone-ware supports of the most [approved form. There are always duplicate wires, following different routes, between every two stations, so that if one is broken from any cause, the second remains good until the first can be repaired. To avoid the possibility of interruption or derangement of the system, the Central Station or office is furnished with testing apparatus, by which the integrity of each circuit is constantly ascertained.

For convenience and security, the Signal Boxes and Alarm Bells are not connected respectively in one great Signal Circuit and one great Alarm Circuit, but the number of circuits of each class is

multiplied, all of them radiating from the Central Station like the petals of a flower. Thus a signal circuit may traverse the north part of a city, and be connected with Signal Boxes; another the south part, &c. The Signal Boxes numbering 15 or 20.

In the present case, the Alarm Circuits would extend from the Central Office (State House), to each bell. The operations of these circuits are all, however, connected with the Central Station, so that any Signal Box can communicate its intelligence to the centre, and all the bells on the various circuits can be struck at once, if desired, from the centre.

The system is called into operation, in case of fire, by applying to the nearest "*Signal Box*," of which there is one, say within one or two squares of every house in the city. The Signal Box itself is a solid cast iron cottage-shaped box, attached to the side of a house, opposite a gas lamp, and communicating by wires enclosed in a wrought iron pipe, with the Signal Circuit overhead. The box is locked, but a sign tells where the key may be found, or a police officer or watchman can furnish a key. On opening the door, a *crank* is seen within. On turning this, the number not only of the District, but of the box itself, is instantly communicated to the Central Station; and the longer the crank is turned, the more repetitions of the same signals are given. These signals are received and recorded at the Central Station by a Register, at the same time that a call or office Alarm Bell is struck to give notice to the operator. We may suppose that the fire is signaled from Station or Box *five*, in District *three*. The operator at the centre, on seeing the record, turns immediately to the "*District Key Board*," and presses down a key marked "3." The mechanism of the key board starts at once, and by telegraphic communication, causes the Alarm Bells in the bell towers to strike the District number *three*, and to continue so to do, as long as the key

is held down. This is accomplished by machinery in the bell towers, liberated at each blow by a telegraphic impulse, communicated at suitable intervals by the arrangement of the *key board*. But, suppose the operator only wants to ring a part of the Alarm Bells? By a "*switch*," he disconnects one or more of the Alarm Circuits from the District Key Board, and the corresponding bells are silent. But, while the operator is holding down the key of District *three*, and the telegraphic mechanism is doing all the rest of the work on the bells, he turns to one or more finger keys which communicate back with the Signal Boxes, and presses occasionally *five* times; a little magnet and armature in each Signal Box, gives a sharp click for every motion made by him; and the firemen who run to the nearest box and listen, know that the alarm comes from District *three*, Station *five*; and their familiarity with the District and Station Map, tells exactly where it is, and the nearest route to it.

The accompanying map will materially serve, in illustrating the practical operations of the Fire Alarm and Police Telegraph.

The City of Philadelphia is divided into seven Fire Districts, as already contemplated by your Honorable Bodies, in the proposed re-organization of the Fire Department now before you.

There will be one hundred and fifty Signal Boxes, distributed as follows, viz :

Twenty-three in the First District.

Twenty-five " Second "

Thirty-five " Third "






Twenty " Fourth "

Fifteen " Fifth "

Twelve " Sixth "

Ten " Seventh "

Additional boxes may be added at a very moderate sum.

-  Represents the boundaries of the several Fire Districts.
- * Represents the Central Office, which it is suggested will be the State House.
-  Represents the Signal Boxes.
-  Represents the Alarm Bells to be rung by the Hydraulic Striking Apparatus, of which there is one in each District.
-  Represents the several Police Stations.
-  Represents the Alarm or Bell Circuit.
- Represents the Signal Box Circuits, of which there may be three or more.
- - - - - Represents the Police Circuit.

It will be perceived that each bell is connected with the Central Office by an independent circuit, thus making, combined, seven alarm or bell circuits, one bell to each district.

The great utility and benefit resulting from the proposed system, may be better understood by the following illustrations:

A slight fire might occur in the First District, so slight that there would be no apparent necessity for the Fire Department of any other district to aid in its extinguishment. The operator at the Central Office rings no other bell but that of the district where the fire originates. The fire possibly might increase, and would require the aid and assistance of the department in the second, or even that of the whole city, the operator can ring any or all of the bells, simultaneously, and thus concentrate the operations of the firemen upon one point. Or, again, while the fire is raging in the First District, another breaks out in the Sixth or any other District, he rings the First District Bell one, and the Sixth District Bell six; thus each District will be distinctly notified, independent of each other,

and upon the subduing of the fire in either District the bell in that District can cease ringing without affecting or disturbing the other. So, if several fires were raging at the same time the same principle would apply.

It will be perceived that we have introduced three Signal Box Circuits, one through the First and Second, one through the Third, Fourth and Seventh, the other the Fifth and Sixth Districts. The benefit derived from this arrangement is, that the wires which connect the First and Second Districts may become accidentally or intentionally broken, and still the other District Wires all in working order, and through them any general information communicated at the Central Office, may be sent to all the Police Stations on the Signal Circuits, by adopting a system of signals denoted by a certain number of taps on the calls or small bells in each station, or even at any Signal Box in the street, to those understanding its operations.

These advantages of the American Fire Alarm Telegraph may be recapitulated as follows :

First.—It furnishes an indefinite number of signal stations, scattered in every part of the city, from which an alarm may be communicated, no time being lost between the breaking out or commencement of a fire, and its immediate telegraphic announcement throughout all the city.

Second.—The operator or watchman at the central station, receives the intelligence immediately, and forthwith strikes the district number on one or all the alarm bells by telegraphic agency.

Third.—The number of the station from which the alarm proceeded, as well as the district, is telegraphed to the Fire Department, so that the engines are headed from the first to almost the exact localities of a fire.

Fourth.—The arrangement of the system protects it from interruption, either by accident or design, and it works with equal certainty and promptness in all kinds of weather and at all times.

Fifth.—It prevents almost entirely the occurrence of false alarms, which entail a great expense on the city.

Sixth.—It provides a system of organization, by which the whole Fire Department of the city is brought into communication with a single centre, receiving from this centre, directions either by the bells or signal boxes, and communicating back to it by a finger key, which, in addition to the crank is placed in every signal box.

Seventh.—But *two* operators at the central station are required, one for day and the other for night duty.

Eighth.—It will decrease the amount which is annually paid by insurers, and lessen to a considerable extent the amount of their liabilities.

Ninth.—That it cannot be equalled by any other agent than electricity in point of speed.

Tenth.—That it has decided superiority over all other systems now in use.

POLICE TELEGRAPH.

This instrument has two distinct features, and is both a visual and signal telegraph. The former consists of a dial, with the twenty-six letters of the alphabet represented on its face, at a pointer standing opposite one of the letters. The operator upon striking a key moves this pointer forward one letter, a slight pause designating the letter to be read. Suppose the pointer to be at A, and the word *First* to be written. The writer calls attention by a bell,

then strikes the pointer forward b c d e *F* g h *I* j k l m n o p
q *R S T*.

Any person acquainted with the English alphabet, and can count can operate at sight, while a little practice will render him quite proficient.

The bell is arranged for a signal telegraph, and conversation is carried on by means of a system of numbers, each combination of which is set down in order, in a book set before the operator. This book gives the signification of these numerical symbols; for example, 2, 1, 3, or ** * *** The operator hears two, one, three, on the bell, turns to his book and finds 2, 1, 3—"the Police are wanted at the City Hall." 2, 9, 7 is struck, the book says, "arrest all the parties." 2, 4, 9, "go to the Philadelphia boat." An endless variety of set phrases can be used by this method of combination of figures, and the combination never exceed four figures in a set. The Mayor and Chief of Police, may have a set of private particular numbers, known only to themselves. This might be of the greatest advantage in cases of riot, where policemen sympathize with the rioters and might be negligent of duty, the general communications may be unsafe. Many cases arise, when the Police Telegraph would be of the greatest importance and benefit, and be the means annually of saving vast expense and uncertainty to the public.

All of which is respectfully submitted, &c.

JOHN H. PURDY,

W. J. PHILIPS.

To his Honor, the Mayor,

The Members of the Committee on Police and Trusts
of the Select and Common Councils of the City of Philadelphia.

The undersigned hereby most respectfully propose to construct a Police and Fire Alarm Telegraph, for the sum of thirty-six thousand three hundred dollars, as follows:

The Police Telegraph to connect the State House (central station) with the twenty-four Police station houses, upon the plan now in use in New York city.

The Fire Alarm Telegraph, to consist of one hundred and fifty signal boxes distributed throughout the City, and connecting with the State House.

The undersigned will agree to construct the Police and Fire Telegraph as above, in the best and most substantial manner; where poles are used, the same to be thirty to forty feet in length, about five inches in diameter at the top, of the best timber, neatly dressed and painted, thirty poles to the mile, and where it may be impracticable to erect poles, the iron braces on the houses to be put up in the best manner.

The wire to be of the best quality annealed or galvanized iron, the insulators of the best description. The above includes all the necessary machinery for the Central Office, Police and Fire Alarm Stations. The undersigned will also assign to the City of Philadelphia, the Morse Patent Right, put both the Police and Fire Telegraph in complete working order, and give good und sufficient security for the faithful performance of the whole contract.

JOHN H. PURDY,
W. J. PHILIPS,
C. ROBINSON.

Philadelphia, January 17th, 1855.

Philadelphia, Jan. 17th, 1855.

Hon. ROBERT T. CONRAD,

Mayor of the City of Philadelphia :

SIR: Agreeably to the Resolution of the Councils of the City of Philadelphia, authorizing the Mayor to receive proposals for the erection of a "Fire and Police Telegraph," and in accordance with your published Proclamation that such proposals will be received by you until the 18th day of January, instant, at 12 o'clock, M., I herewith enter my proposals for the construction of such "Fire and Police Telegraph." In the absence of certain information, as to the number of miles required, or the number of stations at which apparatus will have to be placed, I have made such calculations as I thought would approximate, as nearly as possible, to the circumstances under consideration.

There are, I believe, somewhere in the region of sixty-six engine and hose houses and twenty-four Police Stations in the city ; and in order, by the plan I propose, to give instantaneous information of the *precise locality* (even the number of the building, if desired) the fire, to the entire "Fire and Police Department," an apparatus would be required at each Fire and Police Station. This would require about ninety miles of line, with ninety stations. My proposals are, therefore, made on that basis ; and any variation from that amount of line, or number of stations, would add to or decrease the sum named below in the ratio as hereinafter set forth.

PROPOSITIONS.

Poles.—I agree to furnish poles of cedar, white oak, chestnut, or other woods, to be accepted by the Committee of Councils; said poles to be of a length that when firmly planted, they shall be thirty

feet high above ground, shall be straight, shaved clear of bark, thoroughly painted, of a size not less than five inches at the smaller end, and surmounted by a roofing that shall not only protect the insulating substance, but be a tasteful finish to the pole. Said poles shall be planted at least four feet in the ground, and, in number, not less than twenty-two poles to each and every mile. [It may be thought that thirty feet is unnecessarily high for the posts, but there will not be near the liability of breakage of wire, by falling walls in cases of fire, that there would be if they were much shorter.]

Wire.—I agree to furnish No. 9 wire of the best quality, *thoroughly galvanized*, and erect it on the poles in the most approved manner. [The galvanized wire is proposed, as the carbonic acid of the smoke of the city will, in a short time, materially affect the strength and conductability of wire not galvanized, as experience has fully proved.]

Insulators.—The insulation shall be *entirely of glass*, on a plan never as yet used, but believed to be superior to anything yet brought before the public, as it has all the strength of the iron and glass insulators combined, freed from the prejudicial effect of the iron upon the uniformity of the passage of the electrical current.

The Instruments.—The instrument proposed to be used, is one of two kinds.

First.—An embossing instrument, producing an embossed Roman letter. I suppose it to be necessary that the Police Department shall be equally informed, with the Fire Department, of the locality of a fire; but that *all Police information shall be strictly confined to the Police Department*, these instruments are so arranged that although *on the same wire and operated upon simultaneously*, the

operators at the Police Stations, as also the operators at the Fire Stations, can give or receive alarms of fire, with the locality, whilst the transmission of Police intelligence is utterly incomprehensible to any but the operators at the Police Stations, nor is it POSSIBLE that a knowledge to comprehend it can be acquired by others than those at the Police Stations.

Second.—A Thermal Telegraph, recording a system of dots and lines by the process of bringing a heated point in contact with paper properly chemically prepared, by the vibration of an armature before a magnet, in the single or main circuit. Information for the Police Department could be confined to the operators of the Police Stations by having two systems of dots and lines; the Fire Department having one, and the Police Department *both*; but the change necessarily consequent in the Police Department, at the election of each new city government, might lead, ultimately, to the necessity of having two separate wires throughout the city, in order to preserve the operations of the Police Department intact, an object, it appears to me, of vital importance; but why obtain it at the expense of *two wires*, when the same object can be obtained with *one*, by the use of the Embossing Telegraph; and *which cannot be done by any other system of Telegraph extant, unless either two wires, or two distinct and different kinds of instruments or signals are used at each Police Station.*

The Announcing Apparatus.—This will consist of a case with a glass face, situated on the front of each Fire and Police Station, having a lamp so arranged as to illuminate it at night. Upon the locality of the fire being given, the operator at each Fire and Police Station, immediately inserts in the case the name of the corner of the two streets at which the fire is nearest, *thereby informing all*

Fire and Police Stations, and every passer by, the precise locality of the fire.

Furniture.—Each Station shall be furnished with all conveniences properly required.

CONDITIONS.

I will agree to construct a Fire and Police Telegraph, in accordance with the above, as follows :

| | | | | | | |
|--|---|---|---|---|---|-------------|
| Ninety miles of wire, with ninety Stations, with the Embossing Telegraph, at \$555 55 per mile, <i>complete,</i> | - | - | - | - | - | \$50,000 00 |
| Ninety miles of wire, with ninety Stations, with the the Thermal Telegraph, at \$555 55 per mile, <i>complete,</i> | - | - | - | - | - | 40,999 50 |

For any number of miles less than ninety, provided the number of instruments does not exceed an average of one for each mile, I will deduct, if the Embossing Telegraph is used, \$555 55 per mile; and if the Thermal Instrument is used, \$455 55 per mile.

For any number of instruments less than an average of one for each and every mile, I will deduct, if the Embossing System is used, \$200; and if the Thermal Instrument is used, \$100 for each and every instrument less than an average of one for each mile.

For any number greater than an average of one instrument to each and every mile, I will charge, if the Embossing System is used, \$200 for each and every instrument, with the office apparatus complete, included; and if the Thermal System is used, \$100 additional for each and every instrument, with the office apparatus complete, included.

REMARKS.

From the fact that my System of Telegraphing is but just perfected, I have not had an opportunity, as yet, to verify to the world its superiority. I should, therefore, be much pleased, indeed, if the Mayor and Councils would give it an examination, in order to satisfy themselves; and for this purpose, I will, if desired, remove the apparatus again to the city. I have, for some time, had it at Kaighn's Point, New Jersey, testing it on a Line of Telegraph to Cape Island.

Since the agitation of the subject in relation to the "Fire and Police Telegraph," I have been bending a portion of my energies to perfect the most desirable system for that purpose; and those who have examined it, agree with me in saying they far prefer it to any other. You, however, Messrs. Mayor and Councils, are your own umpires.

Very respectfully and truly yours,

E. F. BARNES.

To his Honor the Mayor,

And the Members of the Committees on Police and Trusts,

Select and Common Councils, City of Philadelphia :

The undersigned would respectfully propose to erect a line, connecting the State House (Central Station) with the Police Stations in the several wards, and placing an instrument in each, on the Morse principle, for the sum of fifteen thousand six hundred dollars (\$15,600), as follows, to wit :

| | |
|---|----------|
| Length of wire thirty miles, thirty poles to the mile, ex- | |
| pense of setting, Insulators, &c., &c. - - - | \$7,500 |
| Twenty-four Instruments, one in each Police Station and | |
| one in each Bell Tower (say seven), including the right | |
| to use the Morse Patent, - - - - - | 8,100 |
| | <hr/> |
| | \$15,600 |

This system can be used for fire as well as police purposes. Alarms can be communicated directly to the persons in charge at the Station House, and from one station to the other. Messages may also be sent from the Central Station to any or all the other stations.

Police officers, of ordinary intelligence, can be instructed within, say two months, to act as operators at the several stations, and they can also be employed as bell ringers, without any additional expense for that branch of the service.

The undersigned proposes to superintend the construction of the line for the sum of two thousand dollars (\$2,000), and enter into bonds, with sufficient security, for the faithful fulfillment of the contract.

Respectfully, your humble servant,

C. M. OTTINGER,

No. 435 Chesnut Street.

Philadelphia, 1855.